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ABSTRACT

Understanding the potential power of questions to promote thoughtful examination is at the heart of classroom teaching. If classroom discussions are to bear fruit, with students examining issues intelligently, teachers must develop an awareness of and be sensitive to how questions are framed. Good questions follow an interactive rhythm that produces reflection rather than interrogation, building trust in the interactive relationship. This booklet is organized into four parts and addresses the following topics: (1) several categories of unproductive questions that do little or nothing to promote meaningful examination of ideas; (2) questions that may call for students to examine ideas, but the framing of which defeats more productive examination; (3) effective questioning which helps students to think more intelligently about important issues under study; and (4) guidelines for a well orchestrated discussion. In conclusion, it is suggested that the art of questioning is learned more through experience than in any preparatory program. An analysis of individual questioning styles and a tally sheet for self-examination of questioning are appended.
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Asking the Right Question: The Essence of Teaching

Selma Wassermann

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SELMA WASSERMANN

Asking questions led Selma Wassermann from Brooklyn, New York, where she was born and raised, to Vancouver, Canada.

After teaching in elementary schools in New York and California for 12 years, the question, "How come I still have so many unanswered questions about teaching?" led Wassermann to graduate work at the City University of New York and a doctorate at New York University. Subsequent positions as a professor of education at Hofstra University and Newark State College (now Kean College of New Jersey) forced her to ask, "To what extent is what I am doing making a difference in the quality of my students' performance as teachers?" She currently is a professor of education at Simon Fraser University, where she keeps studying that question through reflection on practice, evaluation, and experimentation with new approaches and methodologies.

A prolific writer, Wassermann has written education texts, journal articles, and classroom materials. She also is the author of *The Long Distance Grandmother*, about maintaining emotional connections with grandchildren in a distant city, and *The Battle of the Bulge*, a low calorie, low cholesterol cookbook.

Series Editor, Derek L. Burleson

Asking the Right Question: The Essence of Teaching

by
Selma Wassermann

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This fastback, the third sponsored by the chapter, is to celebrate the chapter's fifth anniversary. The chapter now has 417 members, which is a growth rate of more than 400% in five years. The chapter is proud of its contributions to the Annual Fund of the Phi Delta Kappa Educational Foundation, which was recognized by its membership in the 20/20 Club in 1991 and the 25/25 Club in 1992. And the chapter is proud of its award-winning newsletter.

Table of Contents

Introduction	7
Unproductive Questions	10
Stupid Questions	10
Too Complex Questions	11
Teacher-Answered Questions	12
Trick Questions	13
Questions that Humiliate	14
Less-than-Productive Questions	15
Trivial Questions	15
Abstract Questions	16
Ambiguous Questions	17
Hit-and-Run Questions	17
The Art of the Question	19
What's the Big Idea?	20
Productive Questions	20
Guidelines for Productive Questions	22
The Well-Orchestrated Discussion	29
Conclusion	32
Appendices	34
References	37

Introduction

During the earliest days of the Gulf War, an anxious world sat glued to the TV sponging up every factoid that that might relieve some of the anxiety. Because it was often difficult to get enough hard news to fill air time, TV reporters tried to capture viewer attention by hastily arranged interviews with whomever happened to be available. These interviews, conducted to take up the slack, often resulted in theatre of the absurd. For example, when SCUD missiles fell in residential neighborhoods in Tel Aviv, reporters were heard to ask frightened and disoriented citizens, "So how did you feel when the SCUD missile landed?"

"So how did you feel when the SCUD missile landed?" is what Carkhuff (1969) calls a "stupid" question. "Stupid" questions are insensitive, disrespectful, and thoughtless. Moreover, they trivialize what is emotionally or intellectually complex.

If you have ever been asked a stupid question, you will immediately understand Carkhuff's classification. Stupid questions are insulting. They evoke anger and feelings of frustration. At a visceral level, the victims of such questions might like to respond, "What kind of a stupid question is that, you moron?" However, if the questioner happened to be a person of authority — like a television reporter, a professional wearing a white coat, or a teacher — the victim might feign politeness and scramble mentally for something to say. "Oh, we were scared," as some did reply in the TV interviews in Tel Aviv.

We learn nothing from the response that we had not known before. Of course people are scared when bombs fall in their neighborhood. What did we expect? Suddenly the question becomes more than stupid. It reduces to banality what is terrifying and horrifying. TV news interviews are not the only place where stupid questions are heard. However, the example given serves as an appropriate opener to the discussion of the art of the question that follows.

It is evident that questions may be grouped in other ways than the "higher order" and "lower order" classifications commonly used. It is also possible to see that questions have the potential to provoke powerful emotional responses, which are likely to affect, sometimes substantially, the subsequent verbal response. To look beyond "higher order" and "lower order" categories, to understand the potential power of questions to promote thoughtful examination, to know the difference between questions that are helpful and those that are hurtful, to recognize the emotional burden that most questions carry, to use questions more wisely, is at the heart of effective classroom teaching.

There is much more to the art of questioning than merely making interrogative demands. If classroom discussions are to bear fruit, with students examining issues intelligently, then questioning must be sensitive to other aspects of the interactive process. These include an awareness of how questions are framed to call for students' examination of important issues and of how the way they are put may provoke anxiety, thereby influencing the nature of the students' responses. Good questions follow an interactive "rhythm" that produces reflection rather than interrogation. They allow for student responses that lead to continued examination of the issues. They are clear in what they are asking students to think about and not so broad or abstract that they defeat the process of thoughtful examination. Good questions invite, not command, students to respond. They build trust in the interactive relationship.

The art of questioning requires teachers to understand the purpose of the question. Does the teacher want to know what students know

or how they use what they know to achieve understanding? The two purposes require entirely different kinds of questions. Studying the art of questions that promote understanding, when the teacher wants to determine what facts students know, is as useless as studying the art of soufflé making when one wants to make meat loaf.

Sometimes teachers think their questions will show how well students understand, but the questions actually used call primarily for students to recall information. So it is important that teachers examine the purpose of their classroom questions and be utterly honest with themselves about their intentions. If questions are to be used to determine what students remember, let's use the best questions we can to do this job. If, on the other hand, questions are intended to get students to use what they know to arrive at understanding, let's use the best questions to do that job. But it's confusing and unproductive when the goals (student reflection and understanding) are inconsistent with the means (questioning to see what students remember).

The art of questioning not only requires that teachers weave all these threads into an interactive dialogue but also demands that teachers attend carefully to a student's response in order to formulate follow-up responses that allow for continued, thoughtful examination of ideas. These principles of questioning are only the introduction to effective practice. Using the principles to sharpen one's interactive teaching skills is what master teachers spend the rest of their teaching lives learning. The chapters that follow are offered by way of promoting that ongoing study to the ultimate benefit of teachers and students.

Unproductive Questions

There are several categories of unproductive questions that do little or nothing to promote meaningful examination of ideas. In some of the worst instances, they are intended to hurt and humiliate. Others dismiss students' ideas, implicitly suggesting that they have no value. There are undoubtedly other categories of unproductive questions, but what follows are examples of those types of question that are not only useless for promoting intelligent examination of ideas but also may be psychologically harmful.

Stupid Questions

There are three conditions that identify stupid questions: 1) The question does not attend to the student's idea. 2) The question is insensitive to the feelings or ideas being expressed. 3) The question is irrelevant or disrespectful.

Stupid questions have cognitive as well as affective consequences. At the cognitive level, they prohibit meaningful examination of the student's ideas. At the affective level, they implicitly communicate that the student's statement is without value. Through the question, the teacher explicitly shifts the focus of the discourse from the student's concern to the teacher's. This is not to suggest that teachers never shift the pathway of discourse from the student's idea to one the teacher considers more important; however, there are more respectful ways of doing this than by asking stupid questions.

Some examples of stupid questions overheard in educational contexts are included here:

Student: My grandmother is very sick and they think she's going to die.

Teacher: How old is she?

Student: I want to study dinosaurs.

Teacher: Have you got a library card?

Student: They tried to save the birds, but they couldn't. They were covered with the oil from the tanker spill.

Teacher: How can we stop pollution?

Teachers' responses that are more respectful of each of the students' ideas above, and that enable more productive examination of the ideas, are often best framed as declarative statements rather than questions. For example, a better response to the student worried about the effect of oil spills on birds might be: "You are so concerned about all those birds that were covered by the oil that spilled from the tanker. You have begun to see the effect of that pollution on the wildlife in the area." A teacher who wants to encourage a student's interest in dinosaurs might have responded by saying: "Dinosaurs! That's an exciting topic. How can I help you?"

Too Complex Questions

A second group of unproductive questions are those whose scope lies beyond a student's ability to respond intelligently in a short answer. These "too big" questions tend to reach for the examination of very sophisticated and complex issues; however, the questions themselves defeat such intelligent examination. It is difficult to make an intelligent response, after only cursory study, to the question, "What were the causes of World War I?"

The counterproductive underside to such questions is that they are framed by teachers and heard by students as calls for a single, brief,

and unambiguous answer. Through such questions and answers, students learn that there are quite simple answers for incredibly complex questions; and students learn to be satisfied with such simplicity even as adults.

Examples of questions that are too complex include:

Why is there pollution?

What were the causes of the American Revolution?

Why did Hamlet kill his stepfather?

Why are people prejudiced?

The ideas contained in these questions may be examined more productively by narrowing their focus. This not only makes them more manageable but implicitly cultivates the need for caution, openness, and uncertainty in responding. For example:

Tell us what you know about some of the ways in which pollution occurs.

What were some of the conditions that led to the Colonists' discontent with British rule? Perhaps to be followed by: What does it take to mobilize a group of people such as these Colonists to revolt against their legitimate rulers?

What kinds of characteristics do you see in Hamlet that make it possible for him to kill his stepfather?

What, in your experience, are some examples of prejudice? Perhaps to be followed by: How do you explain that behavior? What are your ideas?

Teacher-Answered Questions

Another group of unproductive questions are those that a teacher answers before students can respond. It is not that the questions are not good questions; rather, they are unproductive because no student is given the time to think about an intelligent response. Many teachers use these liberally in their discussions. Perhaps their intentions are

to get the students to think; but students have learned that if they do not respond within a few seconds, the teacher will provide the answer. There is no need for students to think; the teacher does it for them. There is no need for students even to listen. The teacher is carrying on a monologue.

So how come the Indians grew corn? (pause) No one? Well, it's because the land was particularly suited to growing corn.

How do we classify frogs? (pause) Amphibians, right?

What were some of the reasons for the westward movement? (pause) O.K., I'll give you a clue. Land. Right? There was all that land out there, and people were beginning to feel the need for more space.

It is fairly easy to solve this questioning problem. Mary Budd Rowe (1973) suggests "wait time," that is, learning to wait (and wait and wait) until a student replies. One chemistry teacher taught himself to put his hands behind his back and count off seconds on his fingers. Before he got through counting, at least one student would break the silence. In that way, the teacher allows the interactive dialogue to begin.

Trick Questions

Trick questions are deliberately (and sometimes maliciously) constructed to stump students. They are intended not only to show students up as pathetically inept but also to show off the "smarts" of the teacher. When students cannot answer the trick question, the teacher waits and waits. Sometimes during this waiting period, the teacher will interject a derogatory comment to point up students' stupidity, for example, "I'm surprised at you for not knowing that!" When the teacher finally gives the answer, he or she does so in such a cocky and arrogant way, both in tone and in body gesture, that all are convinced: the teacher is the brilliant one and the students the great unwashed masses.

While trick questions may serve momentarily to bolster a teacher's vulnerable ego, the price for such arrogance and cruelty is heavy. These teachers gain neither student respect nor admiration; in fact, students see these teachers for what they actually are: small persons who are trying to make themselves large at students' expense.

Questions that Humiliate

In this category are questions laced with sarcasm, with inappropriate humor, with overt rejection, with negative judgment about the student's ability. It is hard to believe that teachers would deliberately set out to humiliate and degrade students. To give them the benefit of the doubt, perhaps these are misguided attempts to get students to "pull up their socks" and to do good work. Yet, however well-intentioned, questions that are full of sarcasm and rejection are so wounding, so utterly destructive, that students who experience them carry scars long after. How else would graduate students learn to preface their questions in seminars with the self-protective introduction, "This may be a stupid question, but . . ."

To even read them from the printed page is to wince; yet these questions have been heard from teachers:

How come you don't know that? Is your memory that short?

It's green? You think it's green? How on earth did you come up with that idea?

Come on now, even you can answer this one, can't you?

This is so easy, a 10-year-old could do it. How come you can't?

The intention of such questions is not to promote thoughtful examination of ideas, but rather to bring students up short, to expose their ignorance to public view. No student comes away unscathed from such an encounter. The effect is a diminishing of confidence, which, for some students, is the final crushing blow, the "down for the count" from which they are never able to recover. For some students, it means never again speaking out in class if they can help it.

Less-than-Productive Questions

Some questions may call for students to examine ideas, but the way they are framed defeats more productive examination. These questions may fall short because they deal with trivia instead of important issues, because they are too difficult for the students, or because their wording is ambiguous. With a shift of phrase or focus, less-than-productive questions can become more productive.

Trivial Questions

Trivial questions do not call on students to examine issues of substance. Often, these questions are simply tangential to the important issues in the lesson. The following examples of trivial questions come from a kindergarten classroom discussion on which animals would make good pets:

Cameron: A parrot would make a good pet because it has a big tongue and it can talk.

Teacher: How did you find out the parrot had a tongue?

Brian: Elephants would make good pets because they could stomp on robbers if robbers came to your house.

Teacher: What else could elephants do?

Put differently, these questions may zero in on the important issues in the lesson about pets. For example, "Do you suppose there

is something about that parrot's tongue that makes it possible for it to talk? What do you think?" Or "You think elephants could make good pets. I wonder if you know anyone who has an elephant for a pet? How come, do you suppose?"

Abstract Questions

Questions that are too abstract defeat thoughtful examination. Such questions prematurely reach beyond students' levels of experience and thus beyond what they are able to comprehend. These questions may appear to be challenging but usually result in inappropriate answers, or worse, no answers. The premature use of such overly challenging questions likely explains the data reported by some researchers to show the "ineffectiveness of higher order questions" (Rosenshine 1979).

To ask a six-year-old, "How does the sound get on the audiotape?" is an example of a question that is too abstract and beyond a normal six-year-old's conceptual grasp. Other highly abstract questions include such humdingers as:

Why do people litter?

How do birds learn to fly?

How do magnets get their power?

These questions are, of course, "answerable" in some fashion by even the inexperienced student. However, if the teacher's purpose is to promote students' understanding, questions framed in the following ways are likely to yield more thoughtful, intelligent examination of the important concepts:

What can you tell me about how all the candy wrappers and orange peels end up in our schoolyard?

How do you suppose birds learn to fly? What ideas do you have about it?

You have observed how magnets have the power to attract and repel. Tell us about some of your observations.

When abstract concept questions are phrased as requests for hypotheses, this brings them down to lower levels of abstraction. In that way, students may respond from observations rooted in their experiences, building habits of thinking and giving way to more intelligent discourse.

Ambiguous Questions

Questions may be ambiguous because they are badly worded, resulting in confusing the student. Ambiguous questions may occur because the teacher lacks practice in formulating precisely worded questions; they also may occur when the teacher feels under stress. When the language of the question is unclear, or when the intent of the question is incomprehensible, student responses may be understandably inept with respect to the issues of substance. Some examples of ambiguous questions are:

What kinds of things did you come up with that you felt were going to be important for constructing your paper airplane?

What was the extent and duration of the Dust Bowl drought?

Framing questions clearly and unambiguously first requires thinking about the question before asking it. While such a procedure may take a moment or two of the teacher's time, that extra moment may be a good investment if it yields much better student responses.

Hit-and-Run Questions

Hit-and-run questions are part of some teachers' style, with the objective being to keep the discussion moving. Here, speed in question and answer takes precedence over the thoughtful examination of issues. Questions come in a rapid-fire assault and flit from issue to issue, without allowing for connections to be made and without allowing for productive examination of any issue.

Following is an example of a hit-and-run question sequence from a third-grade science lesson:

Teacher: What kind of water is in the ocean?

Ken: Salt.

Teacher: Salt water. Right. Now how do we get fresh water?

Alison: We could get it from the rain.

Teacher: Okay. So the rain is going to be fresh water. But how would we get the rain water?

Marty: Clouds.

Teacher: But it would just fall to the ground. How would you get some?

Fiona: In a cup.

Teacher: Okay. We could have a cup or bowl. Is there any other way of getting fresh water?

Jason: Take some salt water and put it on a stove and boil it.

Teacher: When we boil it, it's going to be fresh water?

Jason: Yeah.

Teacher: Nicole disagrees with you.

Nicole: I tried that once, but it still tasted salty.

Teachers who recognize the hit-and-run pattern in their interactive dialogue may wish to consider some of the ideas in the next chapter in order to help shift their questioning and responding strategies away from the superficial toward examinations of matters of depth and substance.

The Art of the Question

Effective questioning helps students to think more intelligently about the important issues under study. It also brings a dynamic quality to class discussion, charging it with a positive energy that not only illuminates understanding but also enlivens the entire class.

The road to using more productive questions in the classroom is not always a smooth one. Teachers who initiate these questions into classroom discussion are likely to meet student resistance initially. Students who have been programmed to respond with single, correct answers may balk at having to think their own ideas, to use their minds in more challenging ways. For students who have lived their school lives in the black-and-white world of certainty, productive questions, which elevate ambiguity and uncertainty, will create higher levels of dissonance and anxiety. Even sophisticated adults long for closure. To know with certainty is very comforting; to live in a world of ambiguity is very unsettling.

Yet, the payoff for using more productive questions is rich. Effectively used, they build habits of thinking. They give students practice in reasoning from the data, in arguing a point of view, in examining issues from more than one perspective, in differentiating between fact and opinion. If these learning goals are important to teachers, they will doubtless find creative and skillful ways to help students bridge the gap from initial resistance to more productive behaviors. Experience with the process tells us that once students have

crossed that bridge, once they have tasted the freedom of thinking for themselves, there is no going back. Ever.

The discussion that follows presents a fundamental, but not exhaustive, list of considerations for developing more effective questioning skills.

What's the Big Idea?

An important strategy for effective questioning is to identify, in advance, the big ideas to be examined in the lesson. With the big ideas explicitly articulated, it is possible for teachers to arm themselves in advance with questions that lead to thoughtful examination of the important issues. This is so obvious that it may appear silly. Yet, "teaching for the big ideas" is far from common practice in classrooms.

The big ideas behind a discussion emerge from the teacher's sense of what is important. What is it that the teacher wants the students to examine in depth? What issues are worth knowing and reflecting on? When big ideas are vague or unarticulated, there may be the illusion that "good" or higher-order questions are being asked; but in the end, no examination of substance has occurred.

Productive Questions

There are some questions that make a mind buzz, some that are so provocative that they continue to dwell in the mind for years. These questions keep us thinking, searching for understanding. They are questions of magnitude, provoking examination of ideas worth knowing and thinking about. They are particularly nettlesome because they are rarely rooted in certainty. It is the very reason they make us think.

If such questions cause so much trouble, why are they classified as productive? The two dimensions of troublesomeness and productivity are not, as one might expect, at odds. Productivity is borne out of troublesomeness; the creation of something new emerges from men-

tal labor. We cannot give birth to an idea, create, or invent without putting the mind through labor.

Productive questions insist on the generation of something new. Whether the mind uses data to make analyses, as in comparing, classifying, or interpreting, or whether it is called on to leap from the data into brand new thought, as in suggesting hypotheses, creating, or evaluating, the mind is being challenged to bring forth new meanings, new configurations, new ideas. Since this is done in the absence of an absolute standard of right and wrong, such thoughts are left to dance in the great, uncharted territory of uncertainty. Nothing new can ever emerge from the certainty of what is already known.

Nothing new or of consequence occurs when students are put the question: "Who painted the Mona Lisa?" But consider what may be uncovered if the question is put more productively: "As you observe this painting, what, in your view, contributes to its ranking as a classic work of art?"

No new territory is examined through the question: "What was the name of the group of people who landed at Plymouth Rock?" But consider what may be examined, instead, with a question that takes the learner down a more productive pathway: "What do you suppose were some of the very first experiences the Pilgrims had when they landed at Plymouth Rock in 1619? What data are you using to support your ideas?"

As in most matters of the curriculum, it is the teacher's choice that dictates the kinds of questions put to students. And teachers will invariably make choices depending on personal needs and educational beliefs. If teachers' needs for security are paramount, no amount of persuasion is likely to influence their choice of questions that have clear and predetermined answers. Needs are not amenable to logical argument; nor are they negotiable. If teachers believe or may be persuaded to believe in the value of generative thinking, and if their needs do not constrain them from teaching in that muddy marshland of the unknown, it is likely that such teachers will choose the route of more productive questions.

Guidelines for Productive Questions

For teachers who want to use more productive questions, the guidelines presented below may be helpful.

1. *Questions that ask students to think more generatively about issues of substance are drawn from the higher-order mental operations.* These include comparing, observing, classifying, hypothesizing, interpreting data, evaluating, deciding, creating, applying principles to new situations, and others (Bloom 1956; Raths et al. 1986). These operations may be explicitly stated in the question, for example:

What observations have you made about the way Matisse uses shapes in this painting?

How would you compare the American Revolution to the Civil War? What are some important differences? What are some similarities?

What hypotheses can you suggest to explain the noise when a balloon bursts?

On the other hand, the operations may not be explicitly stated but, instead, may be implied in the question. For example:

What is your understanding of the events that led to the Great Depression of the 1930s? (interpreting data)

How does the geography of the Andes bear on the climate, the living conditions, the culture, the politics, the economics of South America? (hypothesizing)

Which characters in the story would you choose for a friend? (evaluating, deciding)

2. *The clearly stated question makes it easier for the students to understand what is being asked of them.* This requires a conscious effort in constructing the question, hard enough to do in written work and even harder to do orally. When teachers think that students are answering questions that are different from what the teacher thought was asked, it may be helpful to re-examine the language construction

of the question. The good news is that the more teachers are conscious of the clarity demanded of questions, and the more they work on developing this skill, the easier it gets.

3. *A question that has a clear focus enables students to respond more productively.* Students will be clearer about what is being asked.

A key to formulating well-focused questions is the teacher's clarity about what is to be examined in the question. The focus is intimately related to the big ideas the teacher wishes students to examine. In focusing the question, it is helpful to ask: What is it that I want the students to think about? On what issues do I want to focus with this question? This is more complex than it sounds; it requires teachers to make choices about those issues they believe worthy of focused examination. Here is an example of how this would work. The students in a social studies class have examined the following chart on world demographics in their textbook.

Global Village Demographics

If the world had a population of 1,000:
60 would control half the income.
500 would be hungry.
600 would live in shantytowns.
700 would illiterate.

If the teacher chooses to focus on the big idea of unequal distribution of world resources, she might use the following questions:

What observations would you make about how wealth is distributed in the Global Village?

What, in your view, do these data mean in terms of world health and quality of life?

How do you explain the skewing of the distribution of wealth? What hypotheses can you suggest that might explain it?

The same or another teacher, using the same chart, might choose to focus on the big idea of control by the minority over the majority. Questions that would call for examination of this idea might include:

What observations can you make from the data about the group with power or control?

Where, in your view, does their power come from?

What are the implications of these data for world economics? Standard of living? World politics?

4. *The question that invites, rather than intimidates, makes it safe for students to give their best thoughts.* Tone of voice, nuance of expression, the communication of a mutual searching for meaning, and the words that are used all contribute to the "feel" of the question. In attempting to frame questions as invitations to respond, ask yourself: Am I inviting this student to join me in the examination of this issue?

If the question is offered as an invitation to join in exploration, students are likely to feel a lot safer in generating ideas. If the question contains a hidden hook on which the student is going to be impaled, if it seems threatening or hostile, or if it seems to be disrespectful, the students' anxiety level may thwart an intelligent response. If a teacher has a specific answer in mind for the question, which is revealed by tone of voice, then this will alert students that it is unsafe for them to respond with their own ideas, that they are safe only if they come up with the idea that the teacher is seeking.

5. *Productive questions make a demand on students to think about important issues.* Thoughtful reflection is significantly different from coming up with answers. It requires the consideration of the issue, the examination of data, of alternatives, of examples — in short, the suspension of judgment and the elevation of ambiguity. Student thinking about issues is provoked when questions call for comparisons to

be made, for observations, for setting up classifications, for evaluating and judging, for making choices, for interpreting data, and for applying principles to new situations.

Questions that call for thoughtful reflection include such examples as:

What, in your view, explains the appeal of Lt. Colonel Oliver North?

Without benefit of any electronic device, how might you create a situation that would allow for sound to travel across distance?

What ideas do you have?

What do you see as advantages of the parliamentary system of government? What arguments would you use to support a parliamentary system in the United States?

6. *Questions that are respectful of students' feelings and opinions create a climate of trust, in which they feel safe in offering their own ideas.* The tone of a question reveals a teacher's underlying attitude toward students. If a teacher is respectful of students, sees them as partners in inquiry, and is comfortable in a non-judgmental role, then students will respond to questions as an invitation to examine issues thoughtfully. On the other hand, if a teacher has an attitude that speaks clearly as to who is in control and who has all the answers, then the teacher's questions are likely to reveal this, and students will not risk offering their own views.

In examining the issue of respect for students, ask yourself: Am I inviting students to examine ideas in a forum of true inquiry? Am I able to free myself from an authority role when responding to students' ideas and opinions? Am I able to avoid making positive or negative judgments about the responses given?

7. *Questions that require students to show how they reason from the data allow them to use what they know in order to understand important concepts.* Questions that merely determine what students can recall will neither enliven discussion nor allow for the rich examination of ideas.

While it is certainly valuable to know certain pieces of information, these pieces become useful only when we can put them to work for us. Putting them to work means being able to jiggle them around cognitively, to sort and process them, so that they reveal meanings. Productive questions shed light on meanings, on increased understanding.

In asking productive questions, teachers do not abandon their charge to inform students and build their knowledge base; however, they put the emphasis on using knowledge to arrive at understanding. So instead of, Who are the chief characters in the play *Macbeth*? teachers may ask: How is it possible for someone like Lady Macbeth to influence her husband's behavior in these ways? What data from the play support your position?

8. *The challenge of "why" questions can be reduced by narrowing their focus.* When teachers strive to use more productive questions, there is a great tendency to fall back on "why" questions. "Why?" or "Why do you think so?" questions come easily to the lips and seem, on the surface, to call for student thinking.

In some instances, "why" questions may be productive; but for the most part they are not. For no matter how careful the tone, "Why?" sounds inquisitorial; students feel they are being put on the spot. "Why do you think so?" causes the student to feel defensive. And feeling defensive is not conducive to productive thinking. It is more productive to refocus the question or to ask for more information. Rather than "Why?" consider:

Tell me a bit more about what you mean.

You may have some data to support that position.

Perhaps you can give some examples?

I'm wondering how you figured that out. Can you help me?

9. *Tough questions are made "softer" by turning them into declarative statements.* It is less threatening to students to hear questions in a more gentle, less aggressive form. When questions can be put more

softly, students do not have to wade through layers of initial anxiety before offering their ideas.

For example, instead of asking, "What examples can you give?" the teacher may say, "You may have some examples to support your statements." Another way of reducing the aggressive tone of a question is to put it in less confrontational language. For example, instead of asking, "Is there an inconsistency between those two statements you have just made?" the teacher may say: "Help me to understand. I'm seeing an inconsistency in your two statements. Have I misunderstood you?"

These differences are not so much differences in substance as in tone. Some teachers will prefer the more aggressive questioning mode; others will opt for the softer, less aggressive way. In determining your mode, ask yourself: With these students, what questioning tone is likely to get the better result?

10. *Try letting go of the evaluative response.* One of the necessary conditions for using productive questions effectively is the teacher's ability to resist the tendency to evaluate each student's response. Teachers have become habituated to using evaluative utterances: "Good idea, Fiona." "That's interesting, Lloyd." "Not quite on the mark, Justin." Although some claim that students need evaluative encouragement to stimulate further participation, such responses may cut off further discussion rather than facilitate it.

Try letting go of evaluative responses for one class discussion and then ask students for their perceptions of the experience. Chances are you will find sentiments that match those made by students in the Coquitlam Case Study Project (Adam 1991):

We felt safe to express our own ideas. We felt freer to volunteer our ideas without having to worry about being wrong.

Even if I had a wild idea, I could raise it without worrying that it might be inappropriate. I can be more creative in my thinking and I can stretch my mind in a wider way.

I always felt shy about speaking in class. It took me quite a while before I could feel brave enough to say what I think. But I know the teacher would listen and would not put me down.

Everyone's ideas have value, in some way. It makes me appreciate the ideas of others, even though they are different from mine. We learn to listen to each other, too.

It makes me feel good about my contribution. I feel I have something worthwhile to say and that way my ideas will be heard.

Letting go of evaluative responses does not mean being unappreciative of students' ideas. But there is a considerable difference in impact between "Good idea, Fiona," and "Thanks for sharing your thinking on that issue, Fiona."

The Well-Orchestrated Discussion

It is obvious that the well-balanced, productive discussion is not made up entirely of a string of questions, no matter how well each meets the criteria for provoking thought. The framing of productive questions is only one measure of good interactive teaching. The other lies in the teacher's ability to listen, to attend to what the student is saying, to intersperse productive questions with other responses that require the students to re-examine their ideas. A discussion that consists only of questions will drive the discourse "upward and outward" too rapidly, without allowing students a chance to think reflectively "in and around" their original ideas. New questions invariably shift the discussion to new issues. Before doing this, teachers will wish to give some attention to students' re-examination of their ideas.

For example, the teacher opens the discussion on the Zuni Indians with:

Teacher: Tell me what observations you have made about the ways of life of the Zuni.

Student: Well, they were primarily agricultural.

If the teacher chooses to put a question at this point — for example, "What other observations have you made about them?" — this question immediately shifts the discourse away from the re-examination of the student's idea that the Zuni's way of life is agricultural to other

aspects of their way of life. To require the student to re-examine the statement, the teacher might respond with:

Tell me more about how being agricultural marked their lives.

By responding directly to the student's statement, the teacher calls for re-examination or re-thinking of the idea presented. This is done for several reasons. First, such a response communicates that the teacher has heard the student's idea. Second, when the idea is "played back" for the student to re-examine, the student must take responsibility for it. Such attention to students' ideas creates habits of thinking. Students must think before they speak; they learn that what they say will be subject to critical self-scrutiny.

Before class, teachers may wish to generate three or four questions that will focus the class discussion. The questions might begin with analytical matters (observations of situations, summary of events, procedures) in which students are called on to observe, to compare, to synthesize, and to summarize. Then they move gradually to more speculative questions, where students are asked to generate new ways of thinking through hypothesizing, evaluating and judging, providing examples, and suggesting alternatives. As the examination on the issues progresses, the questions call for deeper, more sophisticated examinations. Making notes on a sheet of paper of the questions to be used and keeping them within reach during the discussion is a helpful strategy. Having the questions in advance will help keep the discussion on path and keep the teacher centered on those big ideas chosen for examination.

In orchestrating an effective classroom discussion, teachers may wish to keep the following guidelines in mind:

1. Know the students. This will help to determine what kinds of questions are most likely to be productive for them and which questions draw on a particular student's experiences.
2. Know how to listen to what the student is saying. Try to comprehend what is being said. Try to formulate responses that accurately reflect students' ideas.

3. Try to respond to a student's idea in a way that calls for the examination of that idea from a fresh perspective.
4. Choose a follow-up response that takes the student's thinking one step further.
5. Decide when the interactive dialogue with that student is "finished," when it is time to move to the next student.
6. Frame questions and responses so that they are always respectful, non-threatening, and productive.
7. Know the "right" time to challenge a student's thinking.
8. Know which kinds of questions are more effective with which students.
9. Know when to shift gears into the territory of the next big idea.
10. Refrain from responding evaluatively to the students' ideas. Avoid like the plague such statements as, "Good idea" and even, "That's interesting."
11. Work the interactive dialogue so that meanings are searched for, understanding grows, students' thinking about the issues occurs, and students feel safe in telling what they think.

Is asking teachers to become masters of the art of questioning unrealistic? Is it beyond teachers' capability to function as artists in this arena? To believe that is to do teachers a great disservice. There is great artistry in teachers; and there is good reason to believe that, given both information and the means to put that information into practice, teachers will find ways to elevate their interactive dialogue to art. If we expect the very best that teachers can give, that is what they will give.

Conclusion

When the teacher is committed to the examination of ideas, learning the art of questioning begins by attention to the guiding principles articulated above. This is followed by a lifetime of serious self-scrutiny of one's questioning style. Like other essential teaching skills, this is learned more on the job than in any preparatory program.

Putting a question that promotes thoughtful, intelligent examination may seem simple in theory, but in practice it requires considerable skill. The skill lies beyond knowing the words, the phrases, the nuances and intonations, or the categories of "productive" and "less-than-productive." It lies in orchestrating all of these threads into questions and responses that are appropriate to the idea, to the student, to the moment. Developing skill in questioning demands increasingly sophisticated, non-defensive self-scrutiny in which one's interactive style is continually examined.

If the art of questioning may be compared to making music, then learning the guidelines is at the level of learning the notes. Using them in concert is what elevates skill to art. Nadja Sonnenberg, the fiery and brilliant concert violinist, has said, "Even though I've performed it (the Brahms Violin Concerto) a hundred times, I still spend hours and hours studying it before the next concert, since with each study, I'm always learning something new about my playing and about the music." From another perspective, it is helpful to remember Paul Winchell's advice for the budding ventriloquist: "Don't rush. Don't get impatient. Don't get discouraged. Don't ever give up."

A significant difference between the amateur fiddler and the maestro is that the novice goes to the teacher to learn to hear himself play, while the master has already learned to do this. The master hears when she plays the *F#* rather than the *F*; she hears when the phrase marked *legato* is not *legato*; she hears when the tempo is lagging. And because she has learned to hear herself play, she is able to take steps she thinks necessary to improve her performance.

Productive, eloquent, dynamic classroom discussions, like good musical performances, are worth enduring study. Such study begins in the awareness that one does not learn how to do it once and for all. One never finishes studying the art of questioning.

For enduring self-study, there is no better tool than a tape recorder, audiotape for the more cautious, videotape for the more intrepid. In replaying the tape of a classroom discussion, listen for the kinds of questions being asked, the amount of teacher talk, the amount of student talk. When two teachers work together, this partnership can be enormously additive. They can provide support for each other, help examine each other's questioning style and together make plans for further professional development. A tally sheet for self-analysis of one's questioning style is found in the Appendices.

A more intensive self-examination can be made if the teacher is willing to take on the arduous task of making a verbatim transcript of at least 10 minutes of the classroom dialogue and subjecting that transcript to critical analysis. While it is very tedious to write out everything that is being said, even in a 10-minute interval, there is great value in the minute examination of every word and question, of tone and nuance, and of the effect of each question on students' responses. Again, a format for undertaking this critical analysis is included in the Appendices.

Should teachers commit to such a rigorous course of study? Should teachers take the steps that move them in the direction of more effective classroom discussion? It's like asking whether it is a good idea to study the violin. The course of study may be arduous; but it is the only way I know to learn to make music.

Appendices

Analysis of Your Questioning Style

1. What were the big ideas that you wanted the students to examine in this discussion?
2. Why did you consider these big ideas important?
3. Based on your post-discussion reflections, how useful were your questioning skills in the students' examination of the big ideas?
4. Which questions did you see as particularly helpful in getting students to examine the big ideas?
5. Which questions did you see as getting in the way of students' thoughtful examination of the big ideas?
6. To what extent were you able to listen to what the students were saying and then "play back" their ideas for them to reflect on?
7. To what extent were you able to be respectful and non-threatening in your responses, using students' ideas to formulate questions that would help them examine issues more critically?
8. What new insights did you acquire about the art of questioning from your reflections on this discussion?

Tally Sheet for Self-Examination of Questioning Style

Responses that Bring Closure:

- Agrees or disagrees with student's idea _____
- Does not give student a chance to think _____
- Tells student what the teacher thinks _____
- Talks too much or explains it the teacher's way _____
- Cuts student off _____
- Other closure responses _____

Responses that Promote Fear:

- Heckles, is sarcastic, or puts down idea _____

Responses that Limit Student Thinking

- Looks for single, correct answer _____
- Leads student to "correct" answer _____
- Tells student what to do _____
- Gives information _____

Responses that Encourage Re-Examination of the Idea:

- Saying the idea back to student _____
- Paraphrasing _____
- Interpreting _____
- Asking for more information, e.g., "Tell me a little more about that," or "Help me to understand what you mean" _____

Responses that Call for Analysis of the Idea:

- Give me an example _____
- What assumptions are being made? _____
- Why do you suppose that is good? _____
- What alternatives have you considered? _____
- How does that compare with this? _____
- How might that data be classified? _____
- What data support your idea? _____

35

Responses that Challenge:

What hypotheses can you suggest? _____

How do you interpret that? _____

What criteria are you using? _____

How would those principles be applied in this situation? _____

What predictions can be made based on that data? _____

How would you test that theory? _____

What new scheme/plan can you envision for that situation? _____

Accepts Student's Idea Non-Judgmentally:

I see _____

Thank you _____

Responses Unrelated to Examining the Big Ideas:

Classroom/behavior management responses _____

Speech mannerisms _____

Other _____

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